1-1-2012

Volunteer lake assessment program individual lake reports: Nutt Pond, Manchester, NH

New Hampshire Department of Environmental Services

Volunteer Lake Assessment Program Individual Lake Reports

NUTT POND, MANCHESTER, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	415	**Max. Depth (m):**	9.2	**Flushing Rate (yr^{1})**	3.1
Surface Area (Ac.):	16	**Mean Depth (m):**	4	**P Retention Coef:**	0.53
Shore Length (m):	950	**Volume (m^{3}):**	260,500	**Elevation (ft):**	237

TROPHIC CLASSIFICATION

Year	Trophic class
1981	EUTROPHIC
1995	MESOTROPHIC

KNOWN EXOTIC SPECIES

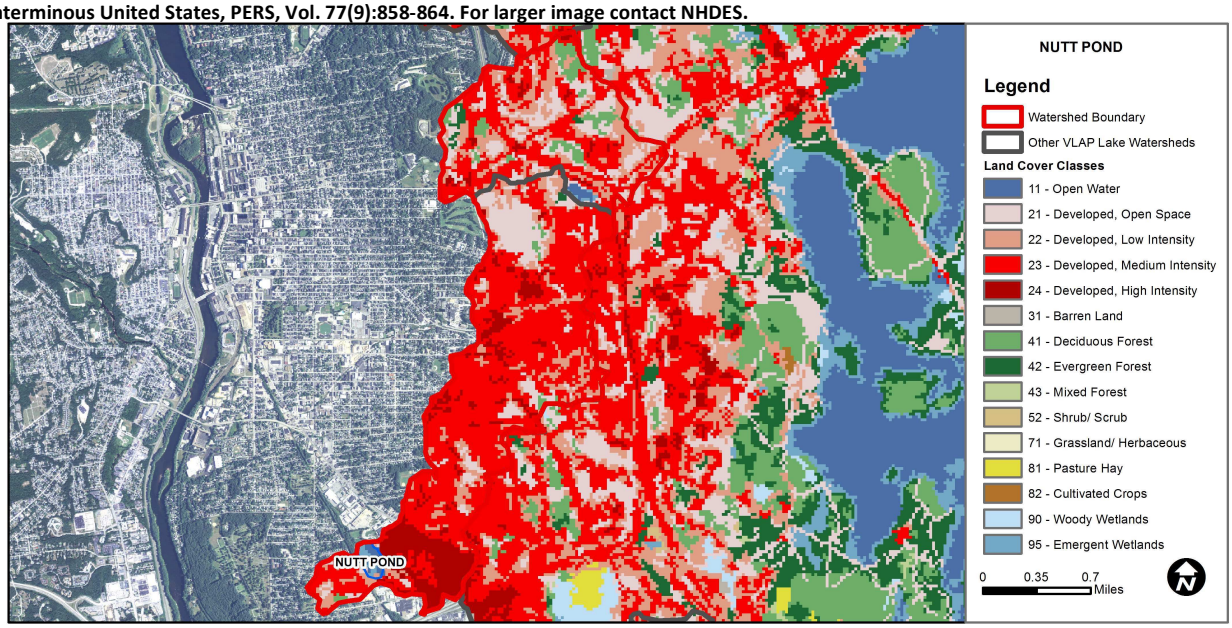
Brazilian Elodea

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	>/=5 samples and median is >threshold.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Slightly Bad	>5 samples and median is > threshold.
Primary Contact Recreation	E. coli	No Data	No Data for this parameter.
	Chlorophyll-a	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



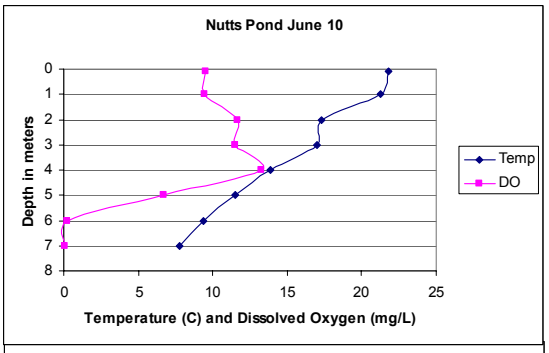
Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	0.8	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	14.4	Deciduous Forest	3.22	Pasture Hay	0
Developed-Low Intensity	18.4	Evergreen Forest	0.59	Cultivated Crops	0
Developed-Medium Intensity	50.9	Mixed Forest	0	Woody Wetlands	0.01
Developed-High Intensity	10.9	Shrub-Scrub	0	Emergent Wetlands	0.52

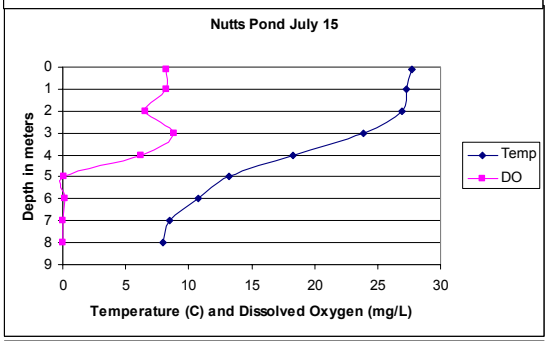
VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
NUTTS POND, MANCHESTER, NH
2012 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphic)*

- **CHLOROPHYLL-A:** Chlorophyll levels were low in June and then increased in July and August. 2012 average levels were lower than 2011. Historical trend analysis indicates a significantly improving (decreasing) chlorophyll level since monitoring began. We hope this trend continues.
- **CONDUCTIVITY/CHLORIDE:** Conductivity and were chloride elevated and indicative of the urbanized watershed. Hypolimnetic (lower water layer) conductivity is much greater than the epilimnion (upper water layer) and metalimnion (middle water layer) due to releases of organic compounds from the sediments under anoxic conditions.
- **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels were slightly greater than the NH lake median and were among the lowest phosphorus levels measured since monitoring began. Historical trend analysis indicates epilimnetic phosphorus tends to fluctuate annually. Hypolimnetic phosphorus levels were elevated due to the release of phosphorus from the sediments under anoxic conditions. Inlet phosphorus levels were slightly elevated however were stable throughout the summer.
- **TRANSPARENCY:** Transparency was the highest (best) measured since monitoring began due to the decreased algal growth and stormwater runoff. Historical trend analysis indicates transparency tends to fluctuate annually.
- **TURBIDITY:** Hypolimnetic turbidity was elevated throughout the summer months due to the accumulation of organic compounds under anoxic conditions.
- **pH:** pH decreased to undesirable levels in the hypolimnion.
- **RECOMMENDED ACTIONS:** Nutts Pond is an urban pond greatly impacted by its watershed. While it is recommended to address conductivity, chloride and phosphorus loading, we recognize the limitations in improving water quality. A positive sign is the significantly improving chlorophyll levels.

Dissolved Oxygen & Temperature Profile





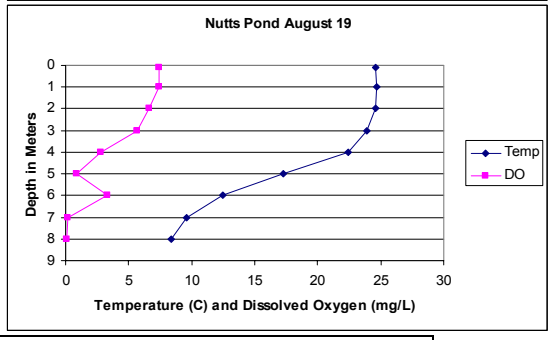


Table 1. 2012 Average Water Quality Data for NUTTS POND

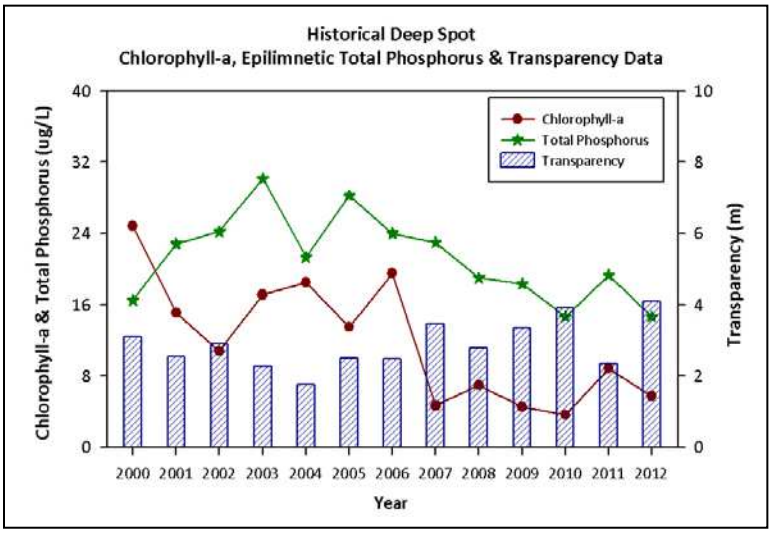
Station Name	Alk.	Chlor-a	Chloride	Cond.	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	uS/cm	ug/l	m		ntu	
						NVS	VS		
Deep Epilimnion	16.4	5.73	190	652	15	4.08	4.00	1.20	7.05
Deep Metalimnion				805	19			2.04	6.88
Deep Hypolimnion				1776	114			92.97	6.36
Inlet			180	746	26			0.67	7.06
Outlet				653	16			1.25	6.99

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	Improving	Data significantly decreasing.
Transparency	Variable	Data fluctuate annually, but are not significantly increasing or decreasing.
Phosphorus (epilimnion)	Variable	Data fluctuate annually, but are not significantly increasing or decreasing.



This report was generated by the NH DES Volunteer Lake Assessment Program (VLAP). For more information contact:
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